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November 27, 1985

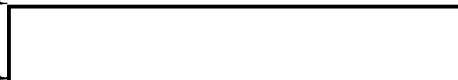
Memorandum

OUTSIDE SOURCE

Mr. Robert R. Kiley
Chairman
Metropolitan Transportation Authority
347 Madison Avenue
New York, New York 10017

LOCAL & STATE

Dear Mr. Kiley:



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Your letter of November 7, 1985, has been referred to me for reply. Your request for the FBI Laboratory examination pertaining to the testing of Girder C-4 in the Metropolitan Transportation Authority tunnel is being granted. Although a copy of the actual laboratory report is not being furnished, the results of the examination are being set forth below:

"This report summarizes the results of inspections, observations and documentation reviews which were conducted relative to evaluation of a main structural support beam in the New York City Transit Authority (NYCTA) tunnel ventilation shaft at FDR Drive and East 63rd Street. The study was conducted by SA [redacted] FBI Laboratory, with participation by [redacted] Research Structural Engineer, Naval Civil Engineering Laboratory, Port Hueneme, California.

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"On February 15, 1984, the FBI Laboratory was requested by the New York Field Office to conduct an on-site inspection of a concrete-encased steel structural support beam in a NYCTA tunnel ventilation shaft to determine if the beam had been modified relative to its original design and, if so, to determine if the modified beam was adequate to support the original design load. The beam in question is designated G4 on NYCTA plan drawings for the tunnel ventilation shaft located at FDR Drive and East 63rd Street.

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- Rec. Mgnt. 1
- Tech. Servs. 1
- Training 1
- Telephone Rm. 1
- Director's Sec'y 1

Mr. Clarke



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rk:daj (9)

(SEE NOTE PAGE 5)

MAIL ROOM

[Handwritten signature]

Mr. Robert R. Kiley

"After a review of then-available NYCTA drawings and specifications, SA [] conducted an on-site inspection of the G4 support beam on March 11, 1984. On-site physical measurements revealed that the actual height of the beam was approximately 14" less along the length of the beam (with the exception of approximately 4' at each end) than was depicted in the drawings. Magnetic field measurements indicated that the bottom flange width of the concrete-encased steel plate girder was consistent with the 26" flange width shown on the drawings. It was further observed that the concrete cover contained some cracks on the tension side of the beam and a hole present in the cover revealed the cover thickness as approximately 1 7/8" at that location.

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[] findings concerning the on-site inspection are enclosed. (see attachment)

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"On March 26, 1984, a review was conducted of a NYCTA field sketch which showed modifications to the G4 beam and to the wall above the beam. The drawing revealed that the original plate girder height had been reduced approximately 13" by cutting the lower portion and replacing the lower flange with 2 flanges from a W14 x 342 I-beam. The drawing further revealed that the replacement flanges were affixed to the vertical surfaces of the shortened web by partial penetration welds and that additional reinforcing bars were required in the wall directly above the beam to compensate for the reduced strength of the modified beam.

"On April 2, 1984, SA [] observed the efforts of [] of the Massachusetts Institute of Technology (MIT) to obtain sonar data relative to the G4 beam and the wall above the beam. It appeared that the sonar scanning was unable to establish whether or not the required additional reinforcing bars were in place in the wall above the G4 beam. A review was made of the ensuing MIT report entitled "An Assessment of the Design Modification for Girder G4, FDR Drive/63rd Street Ventilation Shaft, New York City Transit Authority" prepared by [] The review revealed:

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"1. The MIT calculations apparently relied solely on drawings and information furnished by the NYCTA. There was no apparent independent verification that the additional necessary reinforcement was present in the wall above G4 or that the actual G4 girder configuration was as is depicted in the G4 modification drawing. However, it is noted that the NYCTA construction photos which were furnished to MIT do appear to show the presence of additional reinforcement in the wall above G4.

Mr. Robert R. Kiley

"2. The calculations to determine the "lowered" allowable loading of the modified G4 beam are based on the assumption that the beam cross-section is uniform over the entire length. Inasmuch as the cross-section is not uniform and, particularly, inasmuch as the bottom flange is not continuous over the beam length, whether or not the calculated value is a realistic one is questioned.

"3. The G4 modification drawing indicates the new lower flange plates were welded to the vertical surfaces of the shortened web by the use of partial penetration welds of type BTC-4. Such welds are not permitted in structures if there will be significant tensile stresses acting across the weld and are not permitted at all in structures such as bridges. There is no indication that the MIT evaluation considered the nature of the stress system at the welds.

"On October 12, 1984, drilling tests were conducted on the G4 beam in an effort to directly verify some of the characteristics of the modified plate girder. The results revealed that the lower flange plate width as well as the arrangement of the flange plates relative to the web are as is depicted in the modification drawing for G4. The test drilling further revealed that the concrete cover on the bottom side of the beam in the region tested varied in thickness from 1/2" at the center, to approximately 2 7/8" at the flange edges.

"It was observed during the aforementioned tests that there was considerable water flow and seepage from concrete cracks in, or in the immediate vicinity of, the G4 beam. Because of the thin concrete cover over the center of the girder (where the flange plates are welded to the web) and the apparent penetration of water into the concrete in nearby areas, corrosion of the girder, particularly at the welds, may present a serious problem in the future.

"A review of structural engineering beam design manuals and reference publications did not reveal any beam designs that used either of the two configurations for assembly of girder components as appear in the G4 modification, i.e., 1) use of 2 bottom flange plates (instead of one) and attachment of the plates to the plates to the vertical sides of the web, and 2) use of a bottom flange that is not continuous along the length of the beam. The modified G4 beam design appears to be an "untried" design configuration for which it is difficult to mathematically predict stress distribution under loading. When methods of calculation suitable to a particular design do not exist or are uncertain, the established procedure is to conduct tests to determine the loading behavior of the design prior to its incorporation into a structure."

Mr. Robert M. Kilby

Should you desire any further information regarding this matter I will endeavor to assist.

Sincerely Yours,

Floyd L. Clarke
Assistant Director
Criminal Investigative Division

Enclosures (3)

NOTE: By letter dated 11/7/85, addressee requested FBI Lab report on the closed New York case entitled [redacted] dba Schiavone Construction Co., Secaucus, New Jersey; [redacted] New York City Transit Authority (63rd Street Tunnel Project) CO: NY. As background, this matter was investigated by the NY Division from January 1984, to December 1984, when the Organized Crime Strike Force, EDNY declined prosecution. [redacted] was not a subject of this investigation. Kiley, Chairman, Metropolitan Transportation Authority, State of New York requests this report since it deals with public safety and may contain information regarding the tunnel being unsafe. On November 2, 1985, [redacted] FBI Lab, testified before the Subcommittee on Transportation of the Senate Appropriations Committee. [redacted] testified that based on the FBI's analysis, Girder C-4, "may be unsafe."

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This letter is in response to Kiley's letter. This response was coordinated with [redacted] OCPA. [redacted] handled [redacted] appearance before the Subcommittee on Transportation. SSA [redacted] NY Division concurred with the release of this report.

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APPROVED:

Director _____

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Crim. Inv. *IC/12*

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Inspection _____

Intell. _____

Laboratory *RS/Just*

Legal Coun. _____

Off. of Cong. & Public Affs. _____

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